REMARKS

A. Restriction

The Examiner previously entered a restriction requirement, asserting that the application involved two groups. Group I was claim 1; Group II was claims 2 through 9. Applicant elected Group II but traversed the restriction requirement. In the Office Action, the Examiner made the restriction requirement final. Applicant accordingly cancels claim 1 from this application without prejudice to filing a divisional application.

B. Section 103

The Examiner rejected claims 2 through 9 under Section 103(b) as being unpatentable over Maiti, United States Patent No. 6,020,024. Applicant notes that it canceled claims 2 through 5 when it filed the present divisional application under 37 C.F.R. § 1.53(b). Accordingly, Applicant will restrict its arguments to previously-presented claims 6 through 9 and to new claims 10 through 13. Applicant has not amended original claims 6 through 9. Applicant added new claims 10 through 13 which claim an article of manufacture made by the method of claims 6 through 9.

Claim 6, the original independent claim, generally claims the following steps in the preparation of a dielectric gate material:

1. saturate the surface of a silicon wafer with hydroxyl groups;
2. heat a calcium halide to a temperature sufficient for atomic layer deposition;
3. transport the heated calcium halide to the silicon wafer; and

4. transport gaseous water to the silicon wafer.

The cited reference, Maiti, does not disclose *any* of these steps:

- Maiti does not disclose saturating the surface of the silicon wafer with hyroxyl groups. The words "saturate" (and its cognates) and "hyroxyl" are noticeably absent from Maiti. In fact, Maiti uses a completely different process, as he instead exposes the substrate to a nitridation agent (column 3, lines 2-3) to form a nitrided layer.
- Maiti does not expose the silicon wafer to a heated calcium halide. The word "halide" does not appear in Maiti, nor does "bromide", the specific halide claimed by Applicant in the dependent claims of the present application. In fact, Maiti uses a completely different process. He proposes forming a dielectric layer by chemical vapor deposition of a metal *oxide*, followed by an oxygen anneal (column 3, lines 30-36). Thus, Maiti does propose the use of calcium, as does the Applicant here, but Maiti uses calcium oxide, followed by an oxygen anneal. Calcium oxide is manifestly different from calcium halide. In fact, by teaching the use of metal oxides, Maiti teaches away from the use of the halides that is the prime teaching of the Applicant's invention. "A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities." MANUAL OF PATENT EXAMINING PROCEDURE at 2144.09. However, calcium oxide and calcium halide do not have close structural similarities or similar utilities.

- Finally, Maiti does not disclose the transport of water to the silicon wafer. As noted above, Maiti proposes an oxygen anneal, not the use of water. O_2 is manifestly different from H_2O.

Accordingly, Maiti does not disclose *any* of the steps of the present invention. All that can be learned from Maiti that is relevant to the present discussion is that calcium oxide can be used as a gate dielectric, by depositing a metal film (column 3, lines 31-32), by chemical vapor deposition of a metal oxide (column 3, lines 33-36), or by sputtering a metal layer (column 3, lines 44-48). That teaching is not particularly relevant to the claims of the present invention, however. As noted by the Examiner, the elected method claims state a specific process for forming a dielectric layer, which claims are, according to the restriction requirement, a different invention that the product claim (claim 1) which stated only the material of the dielectric. Maiti states the material of the dielectric and discloses various methods to form that material. It might be obvious to one of skill in the art to form a gate dielectric using atomic layer deposition and the steps disclosed in Maiti, as noted by the Examiner. But Applicant claims a completely different method to form the gate dielectric (and an article of manufacture made by that method), and nothing about that method appears in the cited prior art.

Applicant, accordingly, has presented claims that define over the cited prior art.

Should the present claims not be deemed adequate to effectively define the patentable subject matter, the Examiner is respectfully urged to call the undersigned attorney of record to discuss the claims in an effort to reach an agreement toward allowance of the present application.

Respectfully submitted,
LSI Logic, Inc.

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By: _____

James R. Foley, Reg. No. 39,979
TREXLER, BUSHNELL, GIANGIORGI,
BLACKSTONE & MARR, LTD.
105 West Adams Street, 36th Floor
Chicago, Illinois 60603-6299
Tel: (312) 704-1890

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